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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/072,424	02/08/2002	Timothy R. Knowles	ESLABS.003C1	3953

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KNOBBE MARTENS OLSON & BEAR LLP
2040 MAIN STREET
FOURTEENTH FLOOR
IRVINE, CA 92614

EXAMINER

MATZEK, MATTHEW D

ART UNIT	PAPER NUMBER
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1771

DATE MAILED: 06/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/072,424	Applicant(s) KNOWLES ET AL.	
	Examiner Matthew D. Matzek	Art Unit 1771	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 February 2002.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) 8-12 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 and 13-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 February 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>5/13/02, 11/17/03</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-7 and 13-17, drawn to a composite material, classified in class 428, subclass 292.1.
- II. Claims 8-12, drawn to a method of making a composite, classified in class 423, subclass 447.1.

The inventions are distinct, each from the other because of the following reasons:

1. Inventions II and I are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the composite material of Group I may be made by adhesively attaching the nanotubes to the ends of carbon fibers using a thermoset resin.
2. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.
3. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art because of their recognized divergent subject matter, restriction for examination purposes as indicated is proper.
4. During a telephone conversation with James Herkenhoff on 6/3/2005 a provisional election was made without traverse to prosecute the invention of the composite material, claims

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1-7 and 13-17. Affirmation of this election must be made by applicant in replying to this Office action. Claims 8-12 are withdrawn from further consideration by the examiner, 37

CFR 1.142(b), as being drawn to a non-elected invention.

5. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 13-17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

a. Claims 13-17 are rejected as they recite physical properties (having a pliable contact surface with a higher degree of mechanical resilience than the plurality of fibers in response to application of an external load), but fail to set forth what provides for said property. Ex parte Slob, 157 USPQ states the following with regard to an article claimed by defining property values:

Claims merely setting forth physical characteristics desired in article, and not setting forth specific compositions, which would meet such characteristics, are invalid as vague, indefinite, and functional since they cover any conceivable combination of ingredients either presently existing or which might be discovered in future and which would impart desired characteristics, thus, expression "a liquefiable substance having a liquification temperature from 40°C to about 300°C and being compatible with the ingredients in the powdered detergent composition" is too broad and indefinite since it purports to cover everything which will perform the desired functions regardless of its composition, and in effect, recites

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compositions by what it is desired that they do rather than what they are; expression also is too broad since it appears to read upon materials that could not possibly be used to accomplish purposes intended.

b. Thus, claims 13-17 are indefinite for reciting only the desired physical properties of the carbon fiber material, rather than setting forth structural and/or chemical characteristics of said carbon material.

Double Patenting

7. Claims 1-7 and 13-17 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 21-31 of recently allowed application 09/593,587. Although the conflicting claims are not identical, they are not patentably distinct from each other because both claimed materials comprise a first plurality of carbon fibers and a second plurality of aligned nanofibers/tubes/fibrils wherein the second plurality of fibers is bonded to fibers of the first plurality.

8. Claims 1-7 and 13-17 provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-20 and 45 of copending Application No. 10/464,830. Although the conflicting claims are not identical, they are not patentably distinct from each other because both claimed materials comprise a first plurality of carbon fibers and a second plurality of aligned nanofibers/tubes/fibrils wherein the second plurality of fibers is bonded to fibers of the first plurality.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 102

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The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

9. Claims 1-6 are rejected under 35 U.S.C. 102(e) as being anticipated by Ren et al. (US 2003/0203139) and evidenced by Chung (Carbon Fiber Composites).

c. Ren et al. teach the growth of hollow, highly-oriented, multi-walled carbon nanotubes grown on a non-electrically conductive substrate and the connection of nanotubes with an electrically conductive carbon microfiber for use in an electric circuit [Abstract, 0039, 0081]. The nanotubes range from 4 to 500 nm in diameter and 0.1 to 50 μm in length (Abstract). The carbon nanotube 604 is attached to the tip of the microfiber 608 (Figure 26). It is stated herein that commercial carbon microfibers are known to have diameters in the range from 5-14.5 μm as evidenced herein by Chung (Table 1.2). The connection shown in Figure 26 illustrates a contact surface substantially parallel with the end of the microfiber. Ren et al. teach that the products of the applied invention may be coated with metals [0073].

Claim Rejections - 35 USC § 102/103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

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having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 13 and 14 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Ren et al. and evidenced by Chung (Carbon Fiber Composites) as applied above.

a. Although Ren et al. do not explicitly teach the claimed feature of having the pliable contact surface having a higher degree of mechanical resilience than the plurality of fibers in response to application of an external load, it is reasonable to presume that said property is inherent to Ren et al. Support for said presumption is found in the use of like materials (i.e. predominantly aligned carbon nanofibers forming a pliable contact surface). The burden is upon Applicant to prove otherwise. *In re Fitzgerald* 205 USPQ 594. In addition, the presently claimed property of having the pliable contact surface having a higher degree of mechanical resilience than the plurality of fibers in response to application of an external load would obviously have been present one the Ren et al. product is provided. Note *In re Best*, 195 USPQ at 433, footnote (CCPA 1977) as to the providing of this rejection made above under 35 USC 102.

11. Claim 13 is rejected under 35 U.S.C. 102(e) as being anticipated by or, in the alternative under 35 U.S.C. 103(a) as obvious over Fetchenko et al. (US 6,177,213).

a. Fetchenko et al. teach a composite electrode material for use in electrochemical cells (Abstract). This composite electrode material may comprise a conductive network such as a lattice structure formed by the interconnection of conductive particles, fibers, and strands (col. 8, lines 24-30). This is illustrated in Figure 2. The conductive network may be made of carbon nanotubes (col. 8, lines 30-34). Figure 2 illustrates that a

plurality of aligned fibers having first and second ends with said material forming a pliable contact surface being substantially parallel with said first end.

b. Although Fetchenko et al. do not explicitly teach the claimed feature of having the pliable contact surface having a higher degree of mechanical resilience than the plurality of fibers in response to application of an external load, it is reasonable to presume that said property is inherent to Fetchenko et al. Support for said presumption is found in the use of like materials (i.e. predominantly aligned carbon nanofibers forming a pliable contact surface shown in Figure 2). The burden is upon Applicant to prove otherwise. *In re Fitzgerald* 205 USPQ 594. In addition, the presently claimed property of having the pliable contact surface having a higher degree of mechanical resilience than the plurality of fibers in response to application of an external load would obviously have been present one the Fetchenko et al. product is provided. Note *In re Best*, 195 USPQ at 433, footnote (CCPA 1977) as to the providing of this rejection made above under 35 USC 102.

Claim Rejections - 35 USC § 103

12. Claims 7 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ren et al. as applied above in view of Ferment et al. (US 6,143,445).

a. Ren et al. teach the use of metal coating the carbon fiber composite, but is silent as to the use of nickel.

b. Ferment et al. teach composite electrodes which are used in electrochemical devices (Abstract). The composite electrode may be carbon fibers or carbon fibers that

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have been metallized via a coating process. The metal coating may be nickel (col. 2, lines 59-68).

c. Since Ren et al. and Ferment et al. are from the same field of endeavor, (ie. electrodes), the purpose disclosed by Ferment et al. would have been recognized in the pertinent art of Ren et al.

d. It would have been obvious to one of ordinary skill in the art at the time the invention was made to a person of ordinary skill in the art to modify the carbon microfiber of Ren et al. with a coating of nickel. The skilled artisan would have been motivated by the desire to make the carbon fiber more conductive and thereby more suitable for use as an electrode.

Allowable Subject Matter

13. Claim 15 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph and Double Patenting set forth in this Office action and to include all of the limitations of the base claim and any intervening claims. The claim would also need to be rewritten to remove its dependence upon rejected, independent claim 13. Claim 15 is indicated as allowable because the prior art fails to teach the combination of aligned carbon microfibers with unaligned carbon nanoconstituents predominantly proximate to the first end of said microfibers.

Conclusion

14. Copies of the non-patent literature listed on Applicant's IDS has not been provided by Applicant and therefore has not been reviewed by Examiner.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew D. Matzek whose telephone number is (571) 272-2423. The examiner can normally be reached on 8:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Terrel Morris can be reached on (571) 272-1478. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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Norca
NORCA TORRES
PRIMARY EXAMINER